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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/336,401 06/18/99 SVIRCHEVSKI J LAM1P109

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IM22/0727

EXAMINER

UMEZ ERONINI, L

ART UNIT

PAPER NUMBER

1765

DATE MAILED:

07/27/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

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Office Action Summary

Application No.
09/336,401

Applicant(s)
Svirchevski et al.

Examiner
Lynette T. Umez-Eronini

Group Art Unit
1765



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-24 is/are pending in the application.

Of the above, claim(s) 12-20 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-11 and 21-24 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3,4, and 5

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11 and 21-24, drawn to a method, classified in class 438, subclass 706.
 - II. Claims 12-20, drawn to an apparatus, classified in class 156, subclass 345.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as cleaning a non semiconductor substrate.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Albert S. Penilla on July 17, 2000 a provisional election was made with traverse to prosecute the invention of I, claims 1-11 and 21-24. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 12-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Information Disclosure Statement

6. Reference No. **A**, **L**, and **M** in the information disclosure statement filed February 18, 2000 in Paper No. 5 has been considered. Reference No. **N** fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56© most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Gabriel (U. S. Patent No. 5,730,834).

Gabriel teaches a method of cleaning a surface of a semiconductor wafer following a plasma etching operation, comprising: wetting the surface of the semiconductor wafer by using a non-splash rinse technique, the non-splash rinse technique being configured to quickly and evenly saturate the surface of the semiconductor wafer (abstract; column 2, line 39 - column 3, line 58).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gabriel et al. (U. S. Patent No. 5,730,834) as applied to claim 1 above, and further in view of Gockel et al. (U. S. Patent No. 5,809,832).

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Gabriel does not expressly disclose scrubbing the surface of the wafer with a cleaning brush that applies a chemical solution to the surface of the wafer after the wetting; performing the wetting and scrubbing in a brush box; setting a first delivery and a second delivery source over the surface of the wafer in order to wet the surface of the wafer with a flow rate of water; setting the flow rate to be between 50 ml/minute and 300 ml/minute; setting a time of less than 4 seconds to wet substantially all of top surface of the wafer; rotating the wafer about a radial axis at a rate of between 3 and 20 rpm.

Gockel et al. teach scrubbing the surface of a wafer with a cleaning brush that applies a chemical solution to the surface of the wafer after the wetting (column 8, lines 14-17); performing the wetting and scrubbing in a brush box (column 1, lines 28-41); setting a first delivery and a second delivery source over the surface of the wafer in order to wet the surface of the wafer with a flow rate of water (column 7, lines 50-52); and rotating the wafer (column 1, lines 18-20). Gockel et al. disclose a control board and control panel that an operator uses to interact with the control board which control motors or other devices within the scrubber control system (column 15, line 38 - column 16, line 17), which reads on adjusting parameters such as the flow rate of the delivery source, the rotational speed of the wafer, and the wetting contact time of the wafer.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Gabriel by using the method of scrubbing a semiconductor wafer and of controlling the process parameters such as delivery flow rates, the wetting

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time, and rotational speed of the wafer as taught by Gockel et al. to obtain a contaminated free substrate.

11. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lo et al. (U. S. Patent No. 5,804,091) in view of Gockel et al. (U. S. Patent No. 5,809,832).

Lo et al. teach a method of cleaning a surface of a semiconductor wafer following a plasma etching operation, comprising: wetting the surface of the semiconductor wafer by using a non-splash rinse technique, the non-splash rinse technique being configured to quickly and evenly saturate the surface of the semiconductor wafer (abstract; column 1, lines 39-52 and column 2, lines 3-34).

Lo et al. do not expressly teach wetting the surface of the semiconductor wafer by setting at least one delivery source over the surface of the wafer in order to evenly saturate the surface of the wafer; the surface of the wafer being quickly saturated in less than about 4 seconds while minimizing splashing over the surface of the wafer; setting the outlet of at least one delivery source to at least partially overlie an edge of the wafer and at an angle relative to the surface of the wafer to range between 5 and 35 degrees.

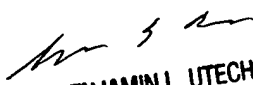
Gockel et al. teach wetting the surface of the semiconductor wafer by setting at least one delivery source over the surface of the wafer in order to evenly saturate the surface of the wafer (column 7, lines 50-52) and interacting with the control board which control motors or other devices within the scrubber control system (column 15, line 38-

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column 16, line 17), which reads on adjusting parameters such as the wetting contact time and the orientation of the delivery source relative to the wafer surface.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Lo et al. by using the method of controlling the process parameters such as the delivery flow rate, wetting time, and rotational speed of the wafer as taught by Gockel et al. to obtain a contaminated free substrate.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is (703) 306-9074.


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

ltue

July 25, 2000